

Original Clinical Articles

Surgical Treatment of Constipation

KENNETH P. GILBERT, MD; F. GARY LEWIS, MD; RICHARD P. BILLINGHAM, MD, and
ERIC SANDERSON, MD,[†] Seattle

A 30-year retrospective review of 544,354 Seattle area hospital admissions yielded 25 patients who underwent surgical therapy for the relief of intractable idiopathic constipation. All patients were refractory to conventional medical treatment consisting of the daily use of laxatives, cathartics, emollients or enemas. Long-term follow-up was available for 13 of the 25 patients. All 13 patients had clinical improvement as a result of the operation. This confirms results reported by other authors. Subtotal colectomy and left hemicolectomy are the procedures generally favored.

(Gilbert KP, Lewis FG, Billingham RP, et al: Surgical treatment of constipation. West J Med 1984 Apr; 140:569-572)

The idea of surgical therapy for a functional bowel disorder has long been controversial. While constipation can nearly always be treated with diet and medication, it is often maintained that an operation is never indicated or successful. However, a patient recently seen by one of us (R.P.B.) prompted a review of area hospital experience and of the literature pertaining to surgical approaches for intractable constipation and idiopathic megacolon. We were interested in determining, first, whether or not a surgical procedure is ever appropriate in the treatment of constipation; second, if so, which patients should be considered for this drastic approach; third, what is the procedure of choice.

Patients and Methods

We retrospectively reviewed the medical records of 544,354 admissions to four Seattle-area hospitals: The Swedish Hospital Medical Center, Providence Medical Center, Northwest Hospital and Virginia Mason Medical Center. These records spanned the 30 years between 1951 and 1981. We found 25 patients who underwent a surgical procedure for constipation. The following information was obtained for each patient: age, sex, symptoms and their duration, previous operations, results of barium enema study, operations done, operative findings, histologic findings and complications. Follow-up was obtained by reviewing subsequent hospital admissions and records from physicians' offices and by telephone interviews whenever possible. Despite

these efforts, several patients were unavailable for long-term follow-up.

Results

There were 20 women and 5 men, whose ages ranged from 26 years to 85 years, averaging 46 years. All patients suffered chronic constipation averaging about 18 years in duration (range 2 to 50 years). In none of these patients could a cause for the constipation be found. All patients required the daily administration of laxatives, cathartics or emollients (or all three); in addition, enemas were commonly self-administered. The average frequency of bowel movements was once a week, ranging from once every two to three days, at best, on once a month. Because of inadequate response to medical management, all of these patients sought surgical relief. In addition to chronic constipation, 23 of the 25 patients had abdominal bloating, cramping and occasionally nausea, back pain and general debility. On physical examination 68% of patients had localized or diffuse tenderness or abdominal distention. Results of preoperative barium enema studies were available for 16 of the 25 patients, primarily those patients having an operation in the more recent study period; these showed generalized or segmental dolichocolon in each case. When only a segment of the colon was dilated, this was most often the sigmoid. Five patients had a history of psychiatric disorder.

Follow-up was available on 13 of the 25 patients

From The Swedish Hospital Medical Center, Seattle.

[†]Dr Sanderson died December 30, 1982.

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Reprint requests to Richard P. Billingham, MD, 801 Broadway, Suite 712, Seattle, WA 98122.

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(Tables 1 and 2). The average duration of follow-up was seven years. Results were categorized as "improved" or "not improved." "Improved" was defined as meeting two criteria: the patient's subjective assessment and increased frequency of bowel movements.

These 13 patients had a total of 14 surgical procedures. One patient initially had a sigmoid resection that was unsuccessful, followed by a subtotal colectomy. Six of the patients had a subtotal colectomy, with either an ileorectal or an ileosigmoid anastomosis. All patients

in this group had improvement. Five patients had a left colectomy and all of them had improvement. Three patients had a sigmoid resection, with two patients improved and one failure as previously mentioned. Those patients for whom sigmoid resection alone was satisfactory showed dilatation of only the sigmoid colon on preoperative barium enema.

Complications included one case of pelvic abscess and three of small bowel obstruction, two of which required a laparotomy. Two occurred one month after

TABLE 1.—Type and Duration of Symptoms in 13 Patients With Intractable Idiopathic Constipation

Patients	Age (yrs), Sex	Duration of Constipation (yrs)	Frequency of Bowel Movements	Symptoms	Physical Findings
1	27 ♀	27	Q 2 wks to q mo	Distention and cramping	Left-sided tenderness
2	27 ♂	27	Weekly	Nausea, vomiting, distention, pain	Distention, generalized tenderness
3	44 ♂	20	Q d to q 3 d	Pain, nausea, distention	Normal
4	50 ♀	50	Q d with enemas	None	Normal
5	55 ♀	10	Q 3 d to q 10 d	Right lower quadrant pain	Right lower quadrant tenderness
6	26 ♀	26	Weekly	Pain, distention	Rectal prolapse, distention
7	71 ♀	10	Q 3 d	Pain	Distention, generalized tenderness
8	85 ♀	5	Q 3 d to q 5 d	Distention, pain	Distention
9	44 ♀	38	Q 4 d to q 6 d	Pain, distention	Normal
10	41 ♀	41	Q 3 d to q 4 d	Cramps, distention, back pain	Tender left lower quadrant
11	62 ♀	2	Q 4 d to q 5 d	Pain, distention	Distention
12	29 ♀	26	Q 3 wks	Nausea, vomiting, cramping	Distention
13	34 ♀	30	Daily with enemas	None	Normal

TABLE 2.—Surgical Treatment and Results in 13 Patients With Intractable Idiopathic Constipation

Patients	Findings of Barium Enema Study	Psychiatric Disorder	Surgical Procedure(s)	Complications	Pathologic Findings	Duration of Follow-up Months	Results
1 ...	Dilated colon	None	Sigmoid resection; subtotal colectomy*	None	Abnormal myenteric plexus	1	Not improved; improved
2 ...	Dilated colon	Mental retardation	Subtotal colectomy	Pelvic abscess	Megacolon	12	Improved
3 ...	Dilated colon	None	Left colectomy	None	No abnormalities	290	Improved
4 ...	Redundant sigmoid	None	Left colectomy	None	No abnormalities	298	Improved
5 ...	Dilated colon	None	Subtotal colectomy	SBO	Melanosis coli	18	Improved
6 ...	Dilated colon	Anorexia nervosa	Left colectomy	None	No abnormalities	2	Improved
7 ...	Diverticula, dilated colon	Manic depression	Left colectomy	SBO	Diverticula, melanosis coli	154	Improved
8 ...	Dilated sigmoid	None	Sigmoid colectomy	None	Chronic vascular congestion	24	Improved
9 ...	Dilated left colon	Occasional depression	Subtotal colectomy	SBO	Dilated colon	8	Improved
10 ...	Dilated left colon	Neurotic	Left colectomy	None	Vascular congestion	192	Improved
11 ...	Dilated sigmoid	None	Sigmoid colectomy	None	No abnormalities	78	Improved
12 ...	Dolichocolon	None	Subtotal colectomy	None	Abnormal myenteric plexus	5	Improved
13 ...	Dilated colon	None	Subtotal colectomy	None	Abnormal myenteric plexus	2	Improved

SBO=small bowel obstruction.

*The second operation done following unsuccessful results with first procedure.

TABLE 3.—*Causes of Constipation*

<i>Mechanical</i>
Inadequate dietary roughage
Immobility
Fissures
Strictures
Cancer
Volvulus
Diverticulitis
Intussusception
Hernia
Dehydration
Endometriosis
Radiation proctitis
Suppression of defecatory urges
<i>Infections</i>
Chagas' disease
Lymphogranuloma venereum
<i>Pharmacologic</i>
Parasympatholytic drugs
Phenothiazines
<i>Neurologic</i>
Depression
Poliomyelitis
Hirschsprung's disease
Paraplegia
Psychogenic
<i>Metabolic</i>
Hypokalemia
Lead poisoning
Porphyria
Hypothyroidism
<i>Functional or Idiopathic</i>

the operation and one at 1½ years postoperatively. Routine pathologic examination in all 25 cases showed no abnormalities except for enlargement of the colon, with occasional findings of diverticulosis, melanosis coli and chronic vascular congestion. Only 1 of the 25 patients was found to have abnormal Auerbach's or myenteric plexuses by conventional microscopy. Special histologic techniques, recently developed,¹⁻³ were applied in the last three cases, and in all three definite severe abnormalities of Auerbach's or myenteric plexuses were found.

Comment

Constipation so severe and intractable as to require surgical intervention is distinctly uncommon. Often the precipitating factors are readily identified in a review of a patient's habits and history, such as inadequate dietary fiber intake, ingestion of constipating medicines and so forth. Regardless of cause, the great majority of cases respond satisfactorily to medical management. If the problem persists, however, and the rectum is chronically distended with feces, a patient becomes less and less aware of rectal fullness. Evacuating the rectum becomes progressively more difficult and the patient turns to the use of laxatives, cathartics, emollients or enemas (or all of these). Animal studies have shown definite histologic damage from anthraquinone laxatives,⁴ and this presumably occurs in humans as well. Its motility now

further impaired by such damage, the colon eventually becomes refractory to these pharmacologic or mechanical aids. In response to this over time, the colon may elongate, dilate and become flaccid. The degree of dolichocolon is usually thought to be proportional to the duration and severity of constipation.

Constipation may be due to a number of causes (see Table 3). There is now some evidence that patients with functional or idiopathic constipation may have some abnormality of bowel innervation.¹⁻³ As described by Michael D. Schuffler, MD (Seattle), a technique of silver staining now being developed often shows axonal fragmentation and clusters of small nuclei within ganglia that may represent some type of neuron precursor that has failed to develop into a mature neuron (oral communication, 1981). At present, however, this technique is only applicable to resected colon specimens. Currently, the diagnosis of functional constipation is most often made by exclusion.

To evaluate such a disorder, a careful history and physical examination need to be done. A barium enema and a full-thickness rectal biopsy should be done to determine the presence of ganglia. In addition, gastrointestinal motility studies may be helpful, but the role of these is currently under investigation.

The first proposed surgical therapy for constipation was lumbar sympathectomy. This resulted in little success. Dixon and Judd in 1948 reported 26 cases with two deaths and only one patient improved.⁵

Several series report results of a colon resection for constipation. The small numbers of patients and the variety of procedures done, sometimes within the same series, often preclude meaningful comparison.

In 1966 Watkins reported the cases of three patients with intractable constipation treated with subtotal colectomy.⁶ All had good results.

Mahorner in 1969 reported seven cases treated with right hemicolectomy in one patient and left hemicolectomy in the other six.⁷ All of these patients had successful outcomes.

In 1977 Streuli and Fartab described the cases of 28 patients who underwent subtotal colectomy.⁸ All of these patients had very satisfactory results. They reported slightly better success with subtotal colectomy than with partial resection.

Another series of patients, reported in 1977 by Lane and Todd from St Mark's Hospital in London, showed resolution of constipation in seven of eight patients who had a subtotal colectomy.⁹ Only one of the three patients with sigmoid resection did well. One patient who had a right hemicolectomy had only partial resolution of symptoms. Two left colectomies were carried out, with one patient showing improvement.

McCready and Beart from the Mayo Clinic in 1979 reported the cases of 23 patients who underwent a variety of surgical procedures.¹⁰ They reported that the Swenson endorectal pull-through procedure gave satisfactory results but was associated with the highest morbidity and resulted in the one death in their series. Anterior resection resulted in a successful outcome in

six of eight patients, all of whom had dilatation confined to the rectosigmoid. For patients in whom the dilatation was more widespread, they recommended extended left colectomy or subtotal colectomy as the procedure of choice.

The most recent series, describing results in 48 patients, is reported by Belliveau and co-workers from the University of Minnesota.¹¹ In all, 37 patients had subtotal colectomies and follow-up was available in 29 cases. Of the 29 patients, 24 showed improvement. Eight sigmoid resections were done, with seven patients available for follow-up and six of them improved. One patient required a subsequent proctocolectomy with ileostomy and had good results. Two right hemicolectomies were carried out with success in one patient. The complication rate was significant (21%) and there was one death.

These authors suggested that this should lead one to a serious attempt to optimize medical management for at least six months, and to more carefully screen patients by physiologic testing with radiopaque markers and anorectal manometry to help rule out those patients with outlet obstruction who may better respond to myectomy or internal sphincterotomy.

Whereas almost all patients with constipation can be successfully managed with various medical regimens, there is a small group of patients with intractable constipation who are driven to seek surgical relief, and for whom surgical therapy is of benefit. It is now recom-

mended that diagnostic evaluation of these cases should include a careful history and physical examination, a barium enema, a full-thickness rectal biopsy (to rule out congenital megacolon, or Hirschsprung's disease) and possibly gastrointestinal motility studies. When dilatation of the colon is confined to the sigmoid, limited resection can give good results, although more extensive resection may be necessary later. Subtotal or left colectomy resulted in improved bowel function in all patients. There may be a slight advantage to subtotal colectomy and generally this seems to be the procedure of choice for disease not specifically limited to the sigmoid colon.

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